Rec'd PCT/PTO 0 8 DEC 2004

.09/673133

RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical
Information Center (STIC) no errors detected.

Application Serial Number: O9/673,133

Source: PCT/10

Date Processed by STIC: 12/8/04

ENTERED

CRF Errors Edited by the STIC Systems Branch

Serial Number: __09/673,133__

CRF Edit Date: __12/8/04__
Edited by: __AL__

____ Realigned nucleic acid/amino acid numbers/text in cases where the sequence text "wrapped" to the next line

____ Corrected the SEQ ID NO. Sequence numbers edited were:

_____

____ Inserted or corrected a nucleic number at the end of a nucleic line. SEQ ID NO's edited:

_____

____ Deleted: ____ invalid beginning/end-of-file text ; ____ page numbers

____ Inserted mandatory headings/numeric identifiers, specifically:

_____

____ Moved responses to same line as heading/numeric identifier, specifically:

_____

✓ Other: __Sequence 7 - inserted hard return before amino acid__
__385__
_____

Revised 09/09/2003

PCT

```
 3 <110> APPLICANT: Myers, Lisa E
 4         Schryvers, Anthony B
 5         Harkness, Robin E
 6         Loosmore, Sheena M
 7         Du, Run-Pan
 8         Yang, Yan-Ping
 9         Klein, Michel H
11 <120> TITLE OF INVENTION: TRANSFERRIN RECEPTOR GENES OF MORAXELLA
13 <130> FILE REFERENCE: 1038-1102 MIS
15 <140> CURRENT APPLICATION NUMBER: 09/673,133
16 <141> CURRENT FILING DATE: 2000-10-11
18 <150> PRIOR APPLICATION NUMBER: 09/059,584
19 <151> PRIOR FILING DATE: 1998-04-14
21 <150> PRIOR APPLICATION NUMBER: PCT/CA99/00307
22 <151> PRIOR FILING DATE: 1999-04-12
24 <160> NUMBER OF SEQ ID NOS: 22
26 <170> SOFTWARE: PatentIn Ver. 2.1
28 <210> SEQ ID NO: 1
29 <211> LENGTH: 2121
30 <212> TYPE: DNA
31 <213> ORGANISM: Moraxella catarrhalis
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36 tcaggtaata ctggcaacac tggtaatgct ggcggtactg ataatacagc caatgcaggt 180
37 aatacaggcg gtacaaactc tggtacaggc agtgccaaca caccagaacc aaaatataaa 240
38 gatgtgccaa ccgatgaaaa taaaaaagat gaagtgtcag gcattcaaga acctgccatg 300
39 ggttatggca tggctttgag taaaatgaat ctacacaaac aacaagacac gccattagat 360
40 gaaaaagata tcattacctt agacggtaaa aaacaagttg caaaggtga aaaatcgcca 420
41 ttgccatttt cgttggatgt agaaaataaa ttgcttgatg gctatatagc aaaaatgaat 480
42 gaagcggata aaaatgccat ggtgacaga attaagaaag ataataaaga caagtcatta 540
43 tctaaagcag agcttgccaa acaaatcaaa gaagatgtgc gtaaaagcca tgagtttcag 600
44 caagtattat catcactgaa aaacaaaatt tttcattcaa atgatggaac aaccaaagca 660
45 accacacgag atttacaata tgttgattat ggttactact tggtgaatga tggcaattat 720
46 ctaaccgtca aaacagacga actttggaat ttaggccctg tgggcggtgt gttttataat 780
47 ggcacaacga ccgccaaaga gctacccaca caagatgcgg tcaaatataa aggacattgg 840
48 gactttatga ccgatgttgc caaacaaaga aaccgattta gcgaagtgaa agaaaacctt 900
49 caagcaggtc ggtattatgg agcatcttca aaagatgaat acaaccgctt attaactgat 960
50 gagaaaaaca aaccagagcg ttataacggt gaatatggtc atagcagtga gtttactgtt 1020
51 aattttaagg acaaaaaatt aacaggtgag ctgttttagta acctacaaga cagccgtaag 1080
52 ggcaatgtta cgaaaaccaa acgctatgac atcgatgcca atatctacgg caaccgcttc 1140
53 cgtggcagtg ccaccgcaag cgataaagca gaagcaagca aaaccaaaca ccctttacc 1200
54 agcgatgcca aaaatagcct agaaggcggt ttttatggac caaacgccga ggagctggca 1260
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RAW SEQUENCE LISTING   DATE: 12/08/2004
PATENT APPLICATION: US/09/673,133   TIME: 10:42:15

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Output Set: N:\CRP4\12082004\I673133.raw

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56 aaagctgggg aaaaaaccga agccatctta gatgcctatg cacttgggac atttaacaaa 1380
57 aataacgcaa ccacattcac cccatttacc aaaaaacaac tggataactt tggcaatgcc 1440
58 aaaaagttgg tcttgggttc taccgtcatt gatttggtgc ctaccggtgt caccaaagat 1500
59 gtcaatgaat tcaccaaaaa caagccagat tctgccacaa acaaagcggg cgagactttg 1560
60 atggtgaatg ataaagttag cgtcaaaacc tatggctatg gcagaaactt tgaataccta 1620
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62 gctaccacag gcgagaaagc cgtaccaacc aaaggcacag ccaaatattt ggggaactgg 1740
63 gtaggataca tcacaggaaa ggactcatca aaaagctttta atgaggccca agatgttgct 1800
64 gattttgaca ttgactttga gaaaaaatca gttaaaggca aactgaccac caaagaccgc 1860
65 caagaccctg tatttaacat cacaggtgac atcgcaggca atggctggac aggcaaagcc 1920
66 agcaccacca aagcggacgc aggggggctac aagatagatt ctagcagtac aggcaaatcc 1980
67 atcgtcatca aagatgccga ggttacaggg ggctttttatg gtccaaatgc aaacgagatg 2040
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73 <211> LENGTH: 706
74 <212> TYPE: PRT
75 <213> ORGANISM: Moraxella catarrhalis

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82           20                  25                  30
84 Thr Pro Ile Pro Asn Ala Ser Gly Ser Gly Asn Thr Gly Asn Thr Gly
85           35                  40                  45
87 Asn Ala Gly Gly Thr Asp Asn Thr Ala Asn Ala Gly Asn Thr Gly Gly
88           50                  55                  60
90 Thr Asn Ser Gly Thr Gly Ser Ala Asn Thr Pro Glu Pro Lys Tyr Lys
91  65                  70                  75                  80
93 Asp Val Pro Thr Asp Glu Asn Lys Lys Asp Glu Val Ser Gly Ile Gln
94               85                  90                  95
96 Glu Pro Ala Met Gly Tyr Gly Met Ala Leu Ser Lys Met Asn Leu His
97               100                 105                 110
99 Lys Gln Gln Asp Thr Pro Leu Asp Glu Lys Asp Ile Ile Thr Leu Asp
100          115                 120                 125
102 Gly Lys Lys Gln Val Ala Lys Gly Glu Lys Ser Pro Leu Pro Phe Ser
103          130                 135                 140
105 Leu Asp Val Glu Asn Lys Leu Leu Asp Gly Tyr Ile Ala Lys Met Asn
106 145                 150                 155                 160
108 Glu Ala Asp Lys Asn Ala Ile Gly Asp Arg Ile Lys Lys Asp Asn Lys
109               165                 170                 175
111 Asp Lys Ser Leu Ser Lys Ala Glu Leu Ala Lys Gln Ile Lys Glu Asp
112          180                 185                 190
114 Val Arg Lys Ser His Glu Phe Gln Gln Val Leu Ser Ser Leu Lys Asn
115          195                 200                 205
117 Lys Ile Phe His Ser Asn Asp Gly Thr Thr Lys Ala Thr Thr Arg Asp
118          210                 215                 220
120 Leu Gln Tyr Val Asp Tyr Gly Tyr Tyr Leu Val Asn Asp Gly Asn Tyr
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RAW SEQUENCE LISTING   DATE: 12/08/2004
PATENT APPLICATION: US/09/673,133   TIME: 10:42:15

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Output Set: N:\CRF4\12082004\I673133.raw

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124             245                 250                 255
126 Val Phe Tyr Asn Gly Thr Thr Thr Ala Lys Glu Leu Pro Thr Gln Asp
127             260                 265                 270
129 Ala Val Lys Tyr Lys Gly His Trp Asp Phe Met Thr Asp Val Ala Lys
130             275                 280                 285
132 Gln Arg Asn Arg Phe Ser Glu Val Lys Glu Asn Leu Gln Ala Gly Arg
133         290                 295                 300
135 Tyr Tyr Gly Ala Ser Ser Lys Asp Glu Tyr Asn Arg Leu Leu Thr Asp
136 305                 310                 315                 320
138 Glu Lys Asn Lys Pro Glu Arg Tyr Asn Gly Glu Tyr Gly His Ser Ser
139             325                 330                 335
141 Glu Phe Thr Val Asn Phe Lys Asp Lys Lys Leu Thr Gly Glu Leu Phe
142             340                 345                 350
144 Ser Asn Leu Gln Asp Ser Arg Lys Gly Asn Val Thr Lys Thr Lys Arg
145             355                 360                 365
147 Tyr Asp Ile Asp Ala Asn Ile Tyr Gly Asn Arg Phe Arg Gly Ser Ala
148 370                 375                 380
150 Thr Ala Ser Asp Lys Ala Glu Ala Ser Lys Thr Lys His Pro Phe Thr
151 385                 390                 395                 400
153 Ser Asp Ala Lys Asn Ser Leu Glu Gly Gly Phe Tyr Gly Pro Asn Ala
154             405                 410                 415
156 Glu Glu Leu Ala Gly Lys Phe Leu Thr Asn Asp Asn Lys Leu Phe Gly
157         420                 425                 430
159 Val Phe Gly Ala Lys Arg Glu Ser Lys Ala Gly Glu Lys Thr Glu Ala
160         435                 440                 445
162 Ile Leu Asp Ala Tyr Ala Leu Gly Thr Phe Asn Lys Asn Asn Ala Thr
163 450                 455                 460
165 Thr Phe Thr Pro Phe Thr Lys Lys Gln Leu Asp Asn Phe Gly Asn Ala
166 465                 470                 475                 480
168 Lys Lys Leu Val Leu Gly Ser Thr Val Ile Asp Leu Val Pro Thr Gly
169         485                 490                 495
171 Val Thr Lys Asp Val Asn Glu Phe Thr Lys Asn Lys Pro Asp Ser Ala
172         500                 505                 510
174 Thr Asn Lys Ala Gly Glu Thr Leu Met Val Asn Asp Lys Val Ser Val
175         515                 520                 525
177 Lys Thr Tyr Gly Tyr Gly Arg Asn Phe Glu Tyr Leu Lys Phe Gly Glu
178 530                 535                 540
180 Leu Ser Val Gly Thr Ser Asn Ser Val Phe Leu Gln Gly Glu Arg Thr
181 545                 550                 555                 560
183 Ala Thr Thr Gly Glu Lys Ala Val Pro Thr Lys Gly Thr Ala Lys Tyr
184             565                 570                 575
186 Leu Gly Asn Trp Val Gly Tyr Ile Thr Gly Lys Asp Ser Ser Lys Ser
187         580                 585                 590
189 Phe Asn Glu Ala Gln Asp Val Ala Asp Phe Asp Ile Asp Phe Glu Lys
190         595                 600                 605
192 Lys Ser Val Lys Gly Lys Leu Thr Thr Lys Asp Arg Gln Asp Pro Val
193 610                 615                 620
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RAW SEQUENCE LISTING　　　　　　　DATE: 12/08/2004
PATENT APPLICATION: US/09/673,133　　TIME: 10:42:15

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196 625             630             635             640
198 Ser Thr Thr Lys Ala Asp Ala Gly Gly Tyr Lys Ile Asp Ser Ser Ser
199             645             650             655
201 Thr Gly Lys Ser Ile Val Ile Lys Asp Ala Glu Val Thr Gly Gly Phe
202             660             665             670
204 Tyr Gly Pro Asn Ala Asn Glu Met Gly Gly Ser Phe Thr His Asn Thr
205         675             680             685
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210 Val Lys
211 705
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215 <211> LENGTH: 2139
216 <212> TYPE: DNA
217 <213> ORGANISM: Moraxella catarrhalis
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222 gcaggtaatg ctggtagcgg tactggcggt gcaggtagca ctgataatgc agccaatgca 180
223 ggcagtacag gcggtgcaag ctctggtaca ggcagtgcca gcacacaaaa accaaatat 240
224 caagatgtgc caaccgataa aaataaaaaa gatgaagtgt caggcattca agaacctgcc 300
225 atgggttatg gcgtggaatt aaagcttcgt aactggatac cacaagaaca ggaagaacat 360
226 gccaaaatca atacaaatga tgttgtaaaa cttgaaggtg acttgaagca taatccattt 420
227 gacaactcta tttggcaaaa catcaaaaat agcaaagaag tacaaactgt ttacaaccaa 480
228 gagaagcaaa acattgaaaa tcaaatcaaa aaagaaaata aagaacttga taaacggca 540
229 ctaaaagctc ttattgaaaa agttcttgat gactatctaa caagtcttgc taaacccatt 600
230 tatgaaaaaa atattaatga ttcacatgat aagcagaata aagcacgcac tcgtgatttg 660
231 aagtatgtgc gttctggtta tatttatcgc tcaggttatt ctaatatcga cattcaaaag 720
232 aaaatagcta aaactggttt tgatggtgct ttattttata aaggtacaca aactgctaaa 780
233 caattgcctg tatctgaggt taagtataaa ggcacttggg attttatgac cgatgccaaa 840
234 aaaggacaat catttagcag ttttgaaaga cgagctggtg atcgctatag tgcaatgtct 900
235 tcccatgagt acccatcttt attaactgat gataaaaaca aaccagataa ttataacgat 960
236 gaatatggtc atagcagtga gtttacggta gattttagta aaaagagcct aacaggtggg 1020
237 ctgtttagta acctacaaga ccaccataag ggcaaggtta cgaaaaccaa acgctatgac 1080
238 atcaatgccc gtatccacgg taaccgcttc cgtggcagtg ccaccgcaat caataaagat 1140
239 aatgaaagca agccaaaca cccctttacc agcgatgccg acaataggct agaaggcggt 1200
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249 aaagcctatg aagcccaaca atttgctgac aatgccaacc gtgccgagtt tgatgtagac 1800
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RAW SEQUENCE LISTING   DATE: 12/08/2004
PATENT APPLICATION: US/09/673,133   TIME: 10:42:15

Input Set : A:\PTO.KD.txt
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254 tcatttacct acaagagcaa tgatgctgga aatcaagaca aagacagtag tgcatctgtg 2100
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261 <213> ORGANISM: Moraxella catarrhalis
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268              20                  25                  30
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271          35                  40                  45
273 Gly Gly Ala Gly Ser Thr Asp Asn Ala Ala Asn Ala Gly Ser Thr Gly
274      50                  55                  60
276 Gly Ala Ser Ser Gly Thr Gly Ser Ala Ser Thr Gln Lys Pro Lys Tyr
277  65                  70                  75                  80
279 Gln Asp Val Pro Thr Asp Lys Asn Lys Lys Asp Glu Val Ser Gly Ile
280              85                  90                  95
282 Gln Glu Pro Ala Met Gly Tyr Gly Val Glu Leu Lys Leu Arg Asn Trp
283          100                 105                 110
285 Ile Pro Gln Glu Gln Glu Glu His Ala Lys Ile Asn Thr Asn Asp Val
286          115                 120                 125
288 Val Lys Leu Glu Gly Asp Leu Lys His Asn Pro Phe Asp Asn Ser Ile
289  130                 135                 140
291 Trp Gln Asn Ile Lys Asn Ser Lys Glu Val Gln Thr Val Tyr Asn Gln
292 145                 150                 155                 160
294 Glu Lys Gln Asn Ile Glu Asn Gln Ile Lys Lys Glu Asn Lys Glu Leu
295                  165                 170                 175
297 Asp Lys Thr Ala Leu Lys Ala Leu Ile Glu Lys Val Leu Asp Asp Tyr
298              180                 185                 190
300 Leu Thr Ser Leu Ala Lys Pro Ile Tyr Glu Lys Asn Ile Asn Asp Ser
301          195                 200                 205
303 His Asp Lys Gln Asn Lys Ala Arg Thr Arg Asp Leu Lys Tyr Val Arg
304  210                 215                 220
306 Ser Gly Tyr Ile Tyr Arg Ser Gly Tyr Ser Asn Ile Asp Ile Gln Lys
307 225                 230                 235                 240
309 Lys Ile Ala Lys Thr Gly Phe Asp Gly Ala Leu Phe Tyr Lys Gly Thr
310                  245                 250                 255
312 Gln Thr Ala Lys Gln Leu Pro Val Ser Glu Val Lys Tyr Lys Gly Thr
313              260                 265                 270
315 Trp Asp Phe Met Thr Asp Ala Lys Lys Gly Gln Ser Phe Ser Ser Phe
316          275                 280                 285
318 Glu Arg Arg Ala Gly Asp Arg Tyr Ser Ala Met Ser Ser His Glu Tyr
319      290                 295                 300
321 Pro Ser Leu Leu Thr Asp Asp Lys Asn Lys Pro Asp Asn Tyr Asn Asp
322 305                 310                 315                 320
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RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 12/08/2004
PATENT APPLICATION: US/09/673,133   TIME: 10:42:16

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Output Set: N:\CRF4\12082004\I673133.raw

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The rules require that a line not exceed 72 characters in length. This includes spaces.

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RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 12/08/2004
PATENT APPLICATION: US/09/673,133   TIME: 10:42:16

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Output Set: N:\CRF4\12082004\I673133.raw

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VERIFICATION SUMMARY   DATE: 12/08/2004
PATENT APPLICATION: US/09/673,133   TIME: 10:42:16

Input Set : A:\PTO.KD.txt
Output Set: N:\CRF4\12082004\I673133.raw

L:16 M:271 C: Current Filing Date differs, Replaced Current Filing Date